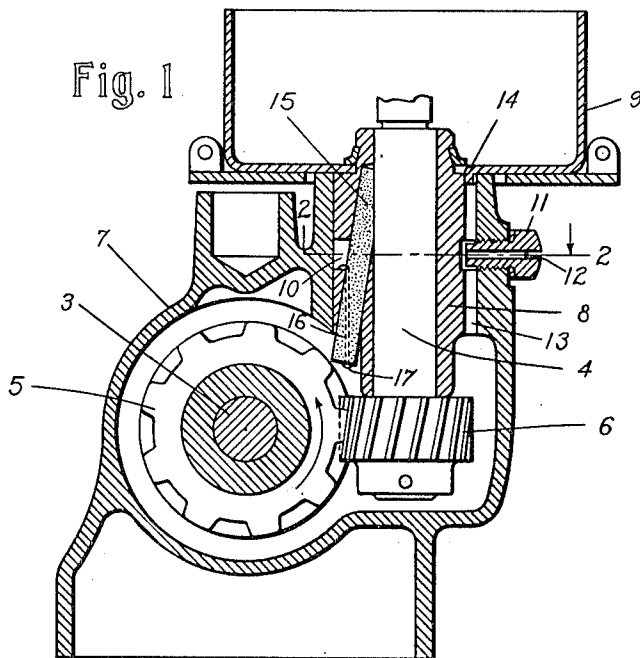
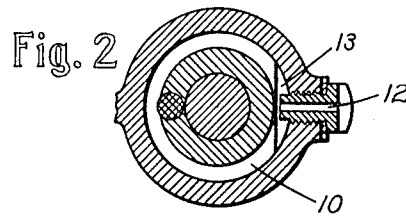


E. S. MIX,
POWER TRANSMISSION MECHANISM.
APPLICATION FILED JULY 2, 1917.

1,274,433.

Patented Aug. 6, 1918.



Inventor:
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by his attorney
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UNITED STATES PATENT OFFICE.

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POWER-TRANSMISSION MECHANISM.

1,274,433.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, Edwin S. Mix, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Power-Transmission Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to mechanism in which an upright shaft is driven by gearing inclosed within an oil-tight casing. The invention is particularly applicable to mechanism used in actuating the circuit-controller of electric ignition-apparatus, although it is applicable to various other uses.

One object of the invention is to provide means for promoting and insuring the constant lubrication of the driven shaft. To this end it is proposed to employ a wick mounted in an oil-passage in the bearing of the driven shaft, this wick being so positioned that its lower end receives a constant supply of lubricant from the gearing by which the shaft is driven.

Another object of the invention is to provide, in a simple and convenient manner, against accumulation of air-pressure in the oil-tight casing, and the overflow or escape of lubricant from the gear-casing which sometimes results from this cause. To this end it is proposed to provide a vent in the novel manner hereinafter described.

The invention will be more particularly set forth in connection with the description of the accompanying drawings, in which Figure 1 is a vertical sectional view of apparatus embodying the invention, while Fig. 2 is a section on the line 2—2 in Fig. 1.

The invention is illustrated as embodied in power-transmission mechanism of the form commonly used to actuate the circuit-controller of electric ignition-apparatus, for an internal-combustion engine. A drive-shaft 3 is geared to and drives an upright shaft 4, by means of a worm 5 and a worm-wheel 6 mounted upon these shafts, respectively. The worm-gears are inclosed within an oil-tight casing 7, so that they may be freely lubricated with fluid lubricant. The

driven shaft 4 turns in a bearing-sleeve 8, to the upper end of which is fixed the usual housing 9 in which the members of the circuit-controller (not shown) are inclosed. For the purpose of adjusting the time of operation of the circuit-controller, the housing 9 is arranged to be rotatable, through a certain angle, about the axis of the shaft 4, and this is accomplished by mounting the bearing-sleeve 8 loosely and rotatably in the gear-casing 7.

In order to retain the bearing-sleeve against longitudinal movement in the gear-casing, it is provided with an annular slot 10 which is engaged by the inner end of a screw 11 threaded into the gear-casing.

One feature of the invention, as before stated, resides in the provision of a vent in the gear-casing, and as a simple and effective means to this end the screw 11 is longitudinally perforated to provide a passage 12. At its inner end this passage communicates with a vertical passage 13, which is formed between the gear-casing and the bearing-sleeve 8 by flattening a portion of the latter, as shown particularly in Fig. 2. This flattened portion performs another function, namely that of affording a bearing for a depending lug 14 on the timer-housing 9, whereby the housing and the sleeve are keyed together against relative rotation.

The passage 12 affords a vent through which some of the air within the gear-casing may escape when this air is expanded owing to the heat developed by friction within the gear-casing. Owing to the location of the vent in the upper portion of the gear-casing, the air is permitted to escape without the escape of lubricant, whereas if no such vent were provided the resulting pressure of air within the housing would tend to force the lubricant out between the bearing-sleeve and the housing, and between the bearing-sleeve and the driven shaft 4, with resulting loss of lubricant and fouling of the apparatus.

Since the perforation 12 may be made in the screw 11 as an incident to the manufacture of the latter upon an automatic screw-machine, an air-vent is provided for the purpose in question in the simplest possible manner and without any additional

operation or substantial increase in expense of manufacture. A further advantage of the arrangement resides in the fact that if the vent becomes clogged in any manner, the screw may be easily removed and the vent may then be conveniently cleaned out, whereas if the vent were provided directly in the gear-casing itself access to it could not be so conveniently secured.

Another feature of the invention resides in the means provided for securing constant and adequate lubrication of the driven shaft 4. For this purpose a slightly inclined passage is bored in the bearing-sleeve 8, and an oil-wick 15, of felt or other suitable material, is fixed in this passage. The passage terminates in a position just above the point of engagement of the worm-gears, and since the worm 5 rotates in the direction indicated by an arrow in Fig. 1, it constantly projects lubricant, owing to the centrifugal movement of the latter, against the lower end of the wick, which is thereby kept constantly moist with lubricant, and as the upper end of the wick bears against the upper portion of the shaft 4, the bearing-surface of this shaft is kept moist. The slight angular or rotative movements of the timer-housing 9 and the sleeve 8 are not sufficient to remove the wick from the vicinity of the worm 5, and thus they do not interfere with the action just described.

As a convenient means for supporting the wick a pin 16 is shown as penetrating the lower portion of the wick and provided with a head 17 at its lower end, bearing against the lower end of the wick. The point of the pin emerges from the side of the wick, and this end is bent outwardly so as to enter and engage the slotted portion of the sleeve and thus prevent descent of the wick from the oil-passage. This device for supporting the

wick is not claimed herein as a part of the present invention.

The invention claimed is:

1. Power-transmission mechanism having, in combination, an upright shaft; a driven gear mounted on said shaft; a driving-gear engaging said driven gear; an oil-tight casing inclosing the gears and provided with a bearing for the upright shaft, said bearing having an oil-passage extending, from the upper part of its bearing-surface, downwardly to a point above the driving-gear; and a wick, in said oil-passage, of which the lower end is exposed, above the driving-gear, to contact with the lubricant raised by the rotation of the gear.

2. In power-transmission mechanism comprising a horizontal shaft, an upright shaft, gears mounted on and connecting the shafts, an oil-tight casing inclosing the gears, a bearing-sleeve, for the upright shaft, and a timer-housing mounted on the bearing-sleeve; the provision of an oil-passage, in the bearing-sleeve, extending from the upper part of its bearing-surface, to a point on the outer surface of the sleeve and near the lower end thereof; and a wick, in said oil-passage, of which the lower end is exposed, above the gear on the horizontal shaft, to the lubricant raised by the rotation of said gear.

3. In power-transmission mechanism comprising an oil-tight casing, a vertical bearing-sleeve mounted thereon, a shaft mounted in said sleeve, and mechanism, in said casing, for rotating said shaft; a screw, arranged to secure the bearing-sleeve in the casing, which screw is longitudinally perforated to provide an air-vent communicating with the interior of the casing.

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